WHAT IS CLAIMED IS:

1. A radar system for protecting a radar compartment from a transmitted radar beam, the system comprising:

an antenna having a transmitter surface for transmitting the radar beam;

a protective member having an outer protective surface and being externally located adjacent the antenna for protecting the radar compartment from the transmitted radar beam; and

an alignment member disposed between the antenna and the protective member, the alignment member being sized and configured to align the transmitter surface towards the outer protective surface for transmission of the radar beam therethrough;

wherein an operating frequency of any portion of the transmitted radar beam diffracting from the outer protective surface is mitigated to protect the radar compartment therefrom.

2. The system of Claim 1 wherein the antenna is a synthetic aperture radar antenna.

3. The system of Claim 1 wherein the transmitting surface comprises at least one transmitter formed thereon.

4. The system of Claim 1 wherein the protective member has a generally rectangular configuration.

5. The system of Claim 1 wherein the protective member is a radome panel.

6. The system of Claim 1 wherein the protective member is fabricated from a material substantially transparent to the radar beam.

7. The system of Claim 6 wherein the material is fiberglass impregnated with S_2 epoxy.

8. The system of Claim 1 wherein the protective member is fabricated from a plurality of plies.

9. The system of Claim 8 wherein the plurality of plies comprise twenty plies.

10. The system of Claim 1 wherein the protective member has a thickness ranging from about 0.160 inches to 0.19 inches.

11. The system of Claim 1 wherein the alignment member is fabricated from a metallic material.

12. The system of Claim 11 wherein the metallic material is aluminum.

13. The system of Claim 11 wherein the metallic material is steel.

14. The system of Claim 1 wherein the alignment member is engaged to the transmitter surface and having an alignment edge extending away therefrom.

15. The system of Claim 14 wherein the transmitter surface has at least one transmitter extending through the alignment member within the alignment edge thereof.

16. The system of Claim 14 wherein the alignment member comprises a plurality of mounting brackets and the transmitter surface comprises a corresponding number of mounting bolts, the mounting brackets being sized and configured to connect with the mounting bolts for engaging the alignment member to the transmitter surface.

17. The system of Claim 14 wherein the outer protective surface and the alignment edge are separated from each other within a distance equivalent to generally less than one wavelength interval of the operating frequency.

18. The system of Claim 17 wherein the distance of separation between the outer protective surface and the alignment edge is within about 0.738 inches.

19. The system of Claim 15 wherein the protective member has an inner protective surface facing towards the at least one transmitter, the inner protective surface and the at least one transmitter being separated from each other within a distance equivalent to three wavelength intervals of the operating frequency.

20. The system of Claim 19 wherein the distance of separation between the inner protective surface and the at least one transmitter is within about 2.214 inches.

21. The system of Claim 1 wherein the radar beam is a radio frequency beam.

22. The system of Claim 1 wherein the operating frequency is about 16 gigahertz.

23. A method of protecting a radar compartment from a transmitted radar beam with a radar system having an alignment member and a protective member defining an outer protective surface, the method comprising the steps of:

a) aligning an antenna towards the outer protective surface of the protective member with the alignment member disposed therebetween;

b) transmitting a radar beam from the antenna through the outer protective surface;

c) diffracting a portion of the radar beam from the outer protective surface; and

d) mitigating an operating frequency of the diffracted portion of the radar beam to protect the radar compartment therefrom.

24. The method of Claim 23 wherein step a) comprises:

1) defining an alignment edge of the alignment member; and

2) separating the outer protective

surface and the alignment edge from each other within a distance generally less than one wavelength interval of the operating frequency.

25. The method of Claim 24 wherein the distance of separation between the outer protective surface and the alignment edge in step 2) is within about 0.738 inches.

26. The method of Claim 23 wherein step a) comprises:

1) defining at least one transmitter of the antenna; 2) defining an inner protective surface of the protective member; and

3) separating the inner protective surface and the at least one transmitter from each other within a distance equivalent to three wavelength intervals of the operating frequency.

27. The method of Claim 26 wherein the distance of separation between the inner protective surface and the at least one transmitter in step 3) is within about 2.214 inches.

28. The method of Claim 23 wherein the antenna in step a) is a synthetic aperture radar antenna.

29. The method of Claim 23 wherein the protective member in step a) is a radome panel.

30. The method of Claim 23 wherein the alignment member in step a) is fabricated from a material chosen from the group consisting of aluminum, steel and other conductive material.

31. The method of Claim 23 wherein the radar beam in step b) is a radio frequency beam.

32. The method of Claim 23 wherein the operating frequency in step d) is about 16 gigahertz.